This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

APPENDIX H

Modifying Surfaces of Devices to Integrate Them Into Wireless Charging Systems

CIP MW 005 and 006 (inductive)

Inventor Tal Dayan, Ofer Goren, Pandurangan Ramakrishnan, Dan Kikinis
6041.P008z

Co-pending provisional applications MW 006. MW 007 are incorporated by reference.

Background

Very often an existing portable device needs to be upgraded to support wireless power. However, gluing contacts on the outside may not always be suitable. for various reasons. For one reason, the contacts may be torn off easily from a device such as, for example, a notebook computer, which is pushed in and pulled out of a carrying case frequently, where the contacts may easily catch on the zipper, etc. For yet another reason. some devices may have a pronounced curve to their external plastic surfaces, which may reduce that ability to make a proper connection or easy gluing of an add-on solution. [2:00]

[2:40]Figure 1 shows an example in current art of a cell phone 100 that has a removable battery pack 111. The battery pack is attached to the outside enclosure of the phone, as shown by dotted line 101. The battery pack has a latch 112 that hooks into a slot 102 on the cell phone to facilitate removal of the pack and attachment of the pack to the phone. Typically, such a battery pack has at least two contacts, shown here as contacts 113 a-n on the pack. that match with a set of contacts 103 a-n on the phone when the battery pack is attached to the phone, as suggested by arrow 120. [3:30]

[3:30]Figure 2 shows a similar system, but of the type where the battery and its enclosure are two separate parts. Again, the position of the battery when attached to the phone is shown by dotted line 101in the outline of the phone 100. However, in this example, the battery 211 with contacts 113 a-n is separate from the battery cover 221, which has a latch 212. The cover has to be put on after the battery is properly situated and connected. Depending on the system. the battery, rather than just having contacts, may have a short cable (not shown) with connectors that plug into a connector on the phone to secure the contacts. After the battery contacts are plugged into the phone contacts, then the cover 221 is put on over battery 211 *in situ* in phone 100. [4:33]

[2:00]What is clearly needed is a system wherein a battery pack, for example, or an enclosure of a

battery pack, or an enclosure of a device may be replaced by one that has integrated contacts, thus avoiding the problems or providing a solution to the problems that would arise out of gluing on additional contacts. Furthermore, such or further additional contacts may be designed to allow powering of a second device in addition to the original, primary device. [2:40]

Description of the Embodiment

[4:36]Figure 3 shows a phone of the style shown in Figure 1, but with multiple alternatives of the novel art of this disclosure. For example, battery pack 111b has been changed to contain an active area 320, as described in previous co-pending applications. Pack 111b shows the battery pack flipped upside down, so now the contacts 313a and 313b are visible, as well as a dotted line that indicates the control circuitry 314 that has been added inside the battery pack. Even though the example discussed is a cell phone, essentially the same applies for all kinds of portable electronic, including, but not limited to cell phones, notebooks, PDA's, still and video cameras, portable video and audio players, any hybrid combinations and other mobile, not yet conceived devices etc.

Often battery packs already contain some circuitry, so rather than a separate add-on, additional new circuitry could be simply integrated into the internal circuitry of the battery pack, such as in area 320. Therefore, the phone would not "see" any change in its electrical capabilities. Some batteries in current art already have external contacts that allow the battery to be charged from the outside while the phone is, for example, in a cradle in a car or on a desktop. Those external contacts could be used for the activities of the novel art of this disclosure as well by extending the contact sizes to match the requirements of the upgraded system.

Those additional shell parts, batteries, contact sets and wires may be sold as upgrades, much like faceplates for phones are sold today in retail stores, often as an after market module. In some cases however, the changes, upgrades and additions may pertain to other subsets of a system than just shell or battery, including but not limited to memory card, CD player, other attachable peripherals etc.

Additionally, on the phone body 100 itself the top portion of the cover may be removed and replaced with a cover that has integrated contacts such as contacts 323a and 323b. Circuitry 314 could be hidden under contact 323b, and a connection to the phone 100 could be established through wires 324 and 325. Similar replacements are made today for purposes of cosmetic upgrades to cell phones. For example, in

many cell phones the face plate can be changed, and for some cell phones, kits are available to add lighting effects to such a cosmetic cover. including a wire that is inserted between the phone and the battery to power the LEDs that generate the lighting effects. Wire 325 may be connected in a similar way to interface between the phone 100 and the battery 111b. If such modification are introduced, the cover could in some cases for example, have contacts that allow a second phone or other, similar device to be powered while the primary battery is charged. [7:25]

Figure 4 shows an approach for a battery pack that has a separate cover, as previously shown in Figure 2. The novel art is similar to that described for Figure 3, above; however, because the batteries in this situation often have wires, the battery may be, for example, plugged into circuitry 314, which is contained in battery cover 221b (221b from the other view). That circuitry would then have a wire 430 that connects to the phone instead of a wire or wires from the battery (not shown). In other cases where the battery doesn't have its own wire, a wire may be inserted between the battery and the phone to properly connect and be able to charge the battery and power the phone. [8:25]

Figure 5 shows another approach, for a notebook computer. it is a further elaboration of the case discussed above. where contacts are added to the case or shell, allowing a second device to be charged and or powered. In this example, notebook 501 typically has a base side 503 and a lid 502 that can be flipped up. It stands on active surface 500, which is connected via cable 520 to power supply 521. which in turn is connected through wire 522 to main ac power. On the top of lid 502, the outer covering has been replaced to contain an active area 510, as described in previous co-pending applications, where devices such as a couple of cell phones. PDAs, or other, similar devices may be charged. The control circuitry may be included in the device. such as the notebook. or in other cases. the contacts offered may just be a pass thru, and control comes from the main control unit of the main pad, surface etc.

As discussed earlier <<note to attorney: in previous apps)>> other methods than direct contact may be used, such as the other wire free charging methods (induction, RF, capacitive etc) . and those components may be integrated in a similar analogous manner into replacement shells etc.

When replacing the battery and or the shell or components thereof, mechanical changes to the original design may be made. For example, the new battery can be larger to contain room for necessary electronics,

elongated to touch an existing power input contactor or the shell may have a different shape (e.g. flat) than the original.

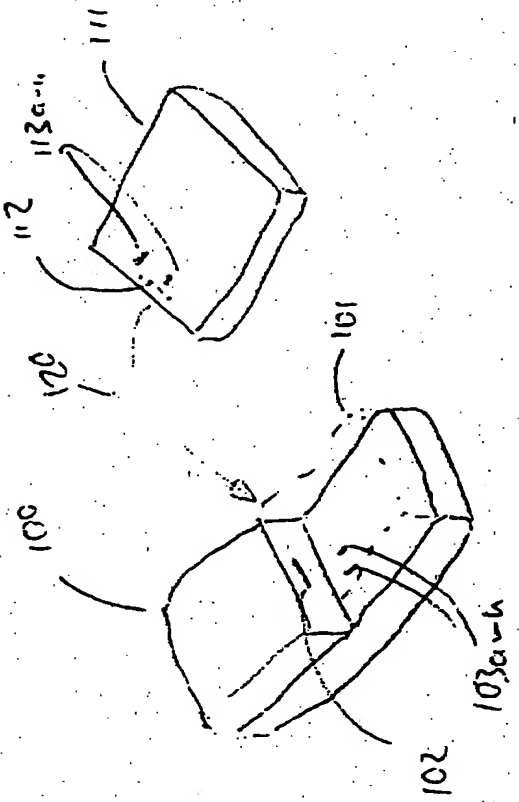

Fig. 1

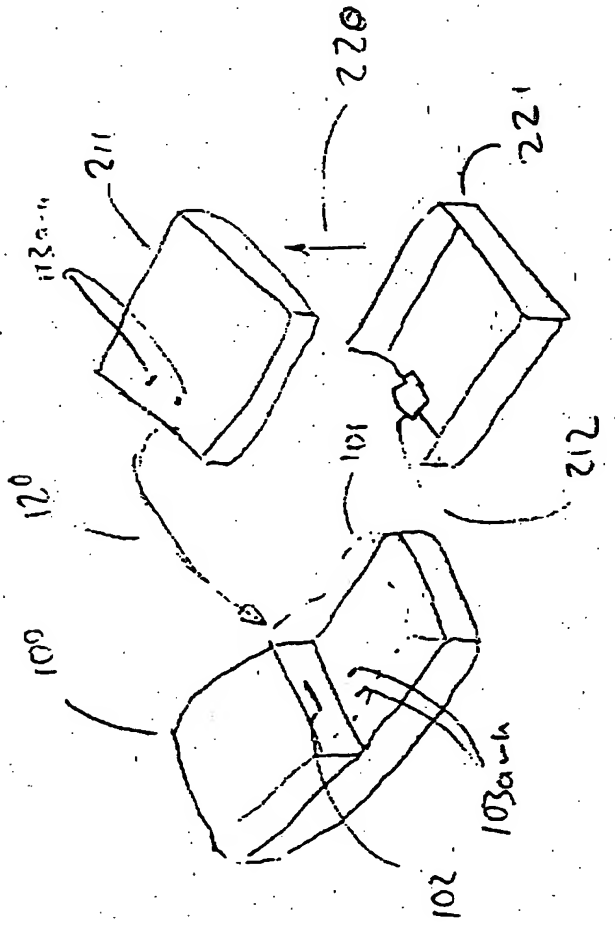

Fig. 2

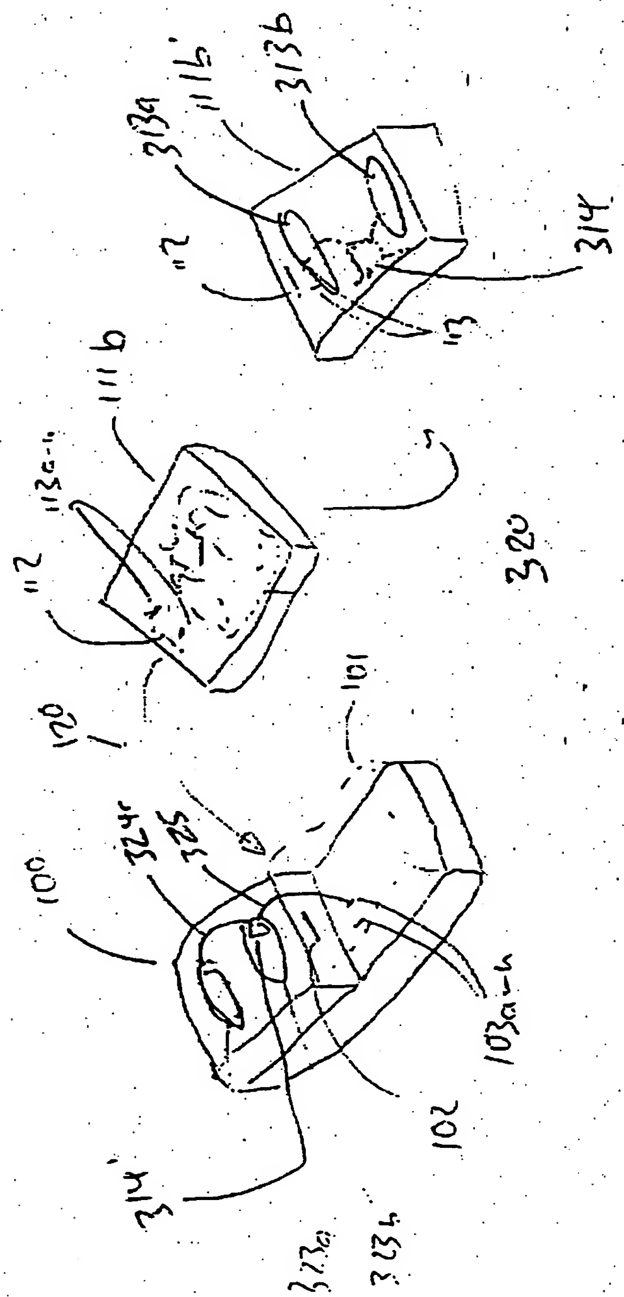
313a
111b'
313b
112
314
113
111b
113a-n
112
320
120
101
100
324
325
103a-n
102
314'
323a
323b

Fig. 3

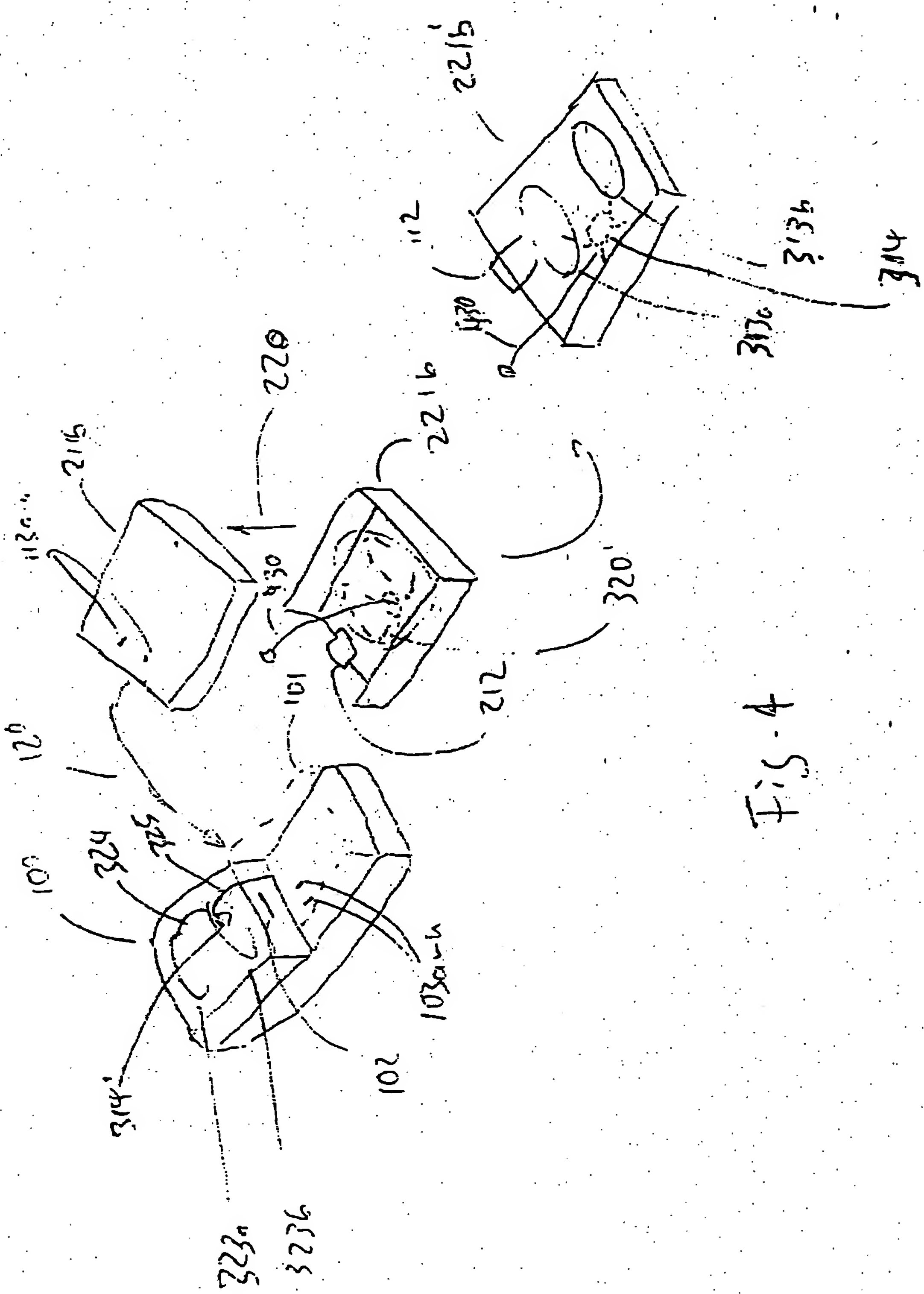

FIG. 4

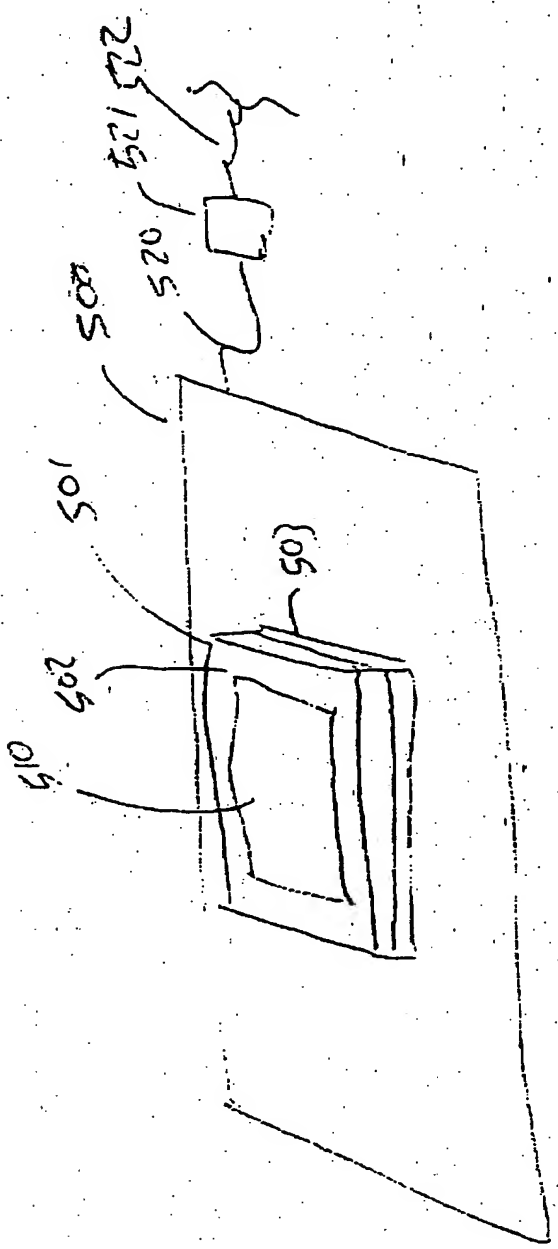

Fig 5